MECHANICS.

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159. Proposed by J. E. SANDERS, Hackney, Ohio.

Required the time for a tree, considered as a material line of uniform density, length $a=100$ feet, to fall; the tree being inclined $\phi=1'$ from perpendicular.

160. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College, Defiance, Ohio.

Given the paracentric acceleration c^2/r^4 and the angular velocity $(n/m)\pi$, to determine the equation of the orbit.

DIOPHANTINE ANALYSIS.

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116. Proposed by HARRY S. VANDIVER, Bala, Pa.

If n is an odd positive integer, and 1, n, n', n'', ..., denote all its distinct integral divisors, then $2^n > 2(n+1)(n'+1)(n''+1).....$

117. Proposed by R. W. D. CHRISTIE.

Without the use of the method of continued fractions, solve the equation $x^2 - 149y^2 = 1$, and generalize your method. [From the *Educational Times*].

AVERAGE AND PROBABILITY.

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145. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in Defiance College, Defiance, O.

In each quadrant of a given circle, a circle is described at random. A point is taken at random in each of these circles. What is the average area of the quadrilateral formed by joining with straight lines these four points?

146. Proposed by L. C. WALKER, A. M., Graduate Student, Leland Stanford Jr. University, Cal.

A random straight line crosses a given ellipse; find the chance that two points, taken at random in the ellipse, shall lie on opposite sides of the line.

MISCELLANEOUS.

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140. Proposed by F. P. MATZ, Sc. D., Ph. D., Professor of Mathematics and Astronomy in Defiance College, Defiance, O.

Prof. Felix Klein asserts that

$$I_1 = \int \frac{dz}{\sqrt{[z(1-z)(1-kz)]}} = 2\mathrm{sn}^{-1}(\sqrt{z})$$

is a *more* canonical form of the first Legendrian elliptic integral than

$$I_2 = \int_0^x \frac{dx}{\sqrt{[(1-x^2)(1-\kappa^2 x^2)]}} = \mathrm{sn}^{-1}(x,\ \kappa).$$

Show this.

141. Proposed by O. W. ANTHONY.

Is f, where f is an operation defined by the equation $f(\mu\nu)=\mu f(\nu)+\nu f(\mu)$, necessarily distributive?

NOTES.

Lewis Neikirk took his Doctor's degree at the University of Pennsylvania on the 17th of June.

Dr. E. R. Hedrick of the Sheffield Scientific School of Yale University, has been elected to the chair of mathematics of the State University of Missouri.

Dr. J. W. Young, who took his Doctor's degree at Cornell this year, has been appointed Assistant Professor of Mathematics at Northwestern University.

Editor Dickson desires to obtain the following back numbers of the MONTHLY to complete his set: Vol. IV, No. 6-7, June-July, 1897; Vol. VI, No. 9-10, October, 1899; Vol. VII, No. 1, January, 1900. Any one having extra copies of one or more of these three numbers will confer a favor by notifying him.

On April 7th, 1903, Editor Finkel was appointed, by the Trustees of the University of Pennsylvania, Special Fellow in Mathematics for the period of one year from the first of September, 1903. In view of this appointment, the Executive Committee of the Board of Trustees of Drury College has granted him a leave of absence for one year. His address, therefore, after September 25th, will be the University of Pennsylvania, Philadelphia, Penn.

In order, therefore, that he may get the greatest good out of the opportunity thus offered for recreation and study, it is desirable that he be relieved as much as possible from the cares and responsibilities of the management of the MONTHLY. It was hoped that a full statement of the arrangement for its management could be made in this issue and the issue was withheld from the mail for over a week awaiting the decision of a gentleman to whom Mr. Finkel's position had been offered. But this gentleman, at the last moment, accepted a permanent position at another place. Hence, at this writing, the matter is not definitely settled. But whatever arrangement is made we wish to assure our readers that the work of the MONTHLY will be carried on, and no pains will be spared on the part of those entrusted to its management to keep up its high standard of efficiency and usefulness.

As during the past year, Dr. Dickson will continue to edit the papers which are offered for publication, and all matters pertaining thereto should be addressed to him at the University of Chicago.

All subscriptions for the coming year should be sent to Mr. W. C. Calland, Treasurer of Drury College, and also all requests for sample copies or missing numbers should be addressed to him.